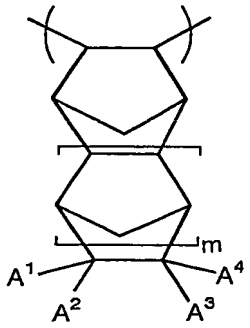
WHAT IS CLAIMED IS:

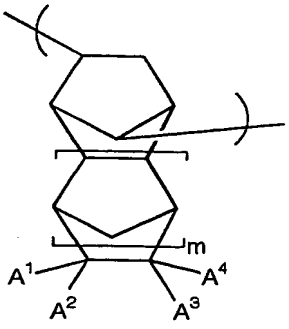
1. A method of forming a cavity between multilayered wirings, which comprises a step of coating the surface of a first dielectric film formed on a semiconductor substrate with a cyclic olefin based addition polymer containing at least one repeating unit selected from repeating units represented by the following general formulae (1) to (7):

General formula (1)



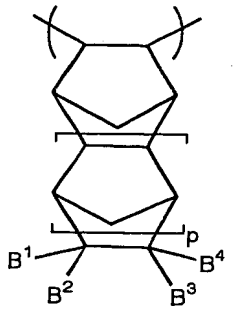
wherein A^1 to A^4 each independently represents a hydrogen atom, a halogen atom, a hydrocarbon group having 1-10 carbon atoms or a halogenated hydrocarbon group having 1-10 carbon atoms; and m is 0 or 1,

General formula (2)



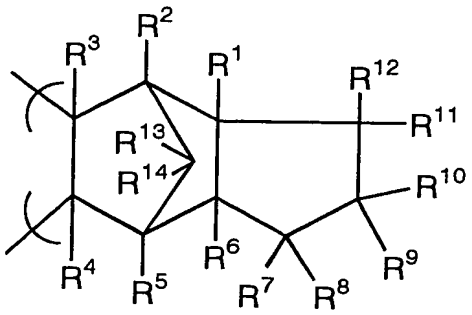
wherein A^1 to A^4 and m are the same as defined in the formula (1),

General formula (3)



wherein B^1 to B^4 each independently represents a hydrogen atom, a halogen atom, a hydrocarbon group having 1-10 carbon atoms, a halogenated hydrocarbon group having 1-10 carbon atoms, a hydrolyzable silyl group, or a polar group represented by $-(CH_2)_kX$; at least one of B^1 to B^4 represents a hydrolyzable silyl group or a polar group represented by $-(CH_2)_kX$; X represents $-C(O)OR^{21}$ or $-OC(O)R^{22}$; R^{21} and R^{22} each represents hydrogen, a hydrocarbon group having 1-10 carbon atoms or a halogenated hydrocarbon group having 1-10 carbon atoms; k represents an integer of 0-3; B^1 to B^4 may be a hydrocarbon ring or a heterocyclic structure formed by B^1 and B^3 or B^2 and B^4, or an alkylidenyl, an imide or a carboxylic anhydride formed by B^1 and B^2 or B^3 and B^4; and p represents an integer of 0-2,

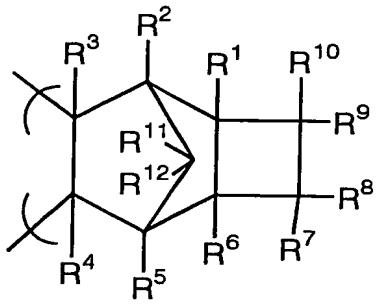
General formula (4)



wherein R^1 to R^{14} each independently represents a hydrogen atom, a halogen atom, a

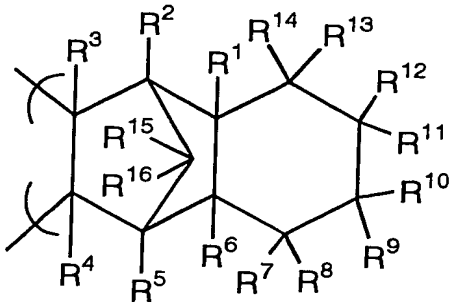
hydrocarbon group having 1-10 carbon atoms or a halogenated hydrocarbon group having 1-10 carbon atoms,

General formula (5)



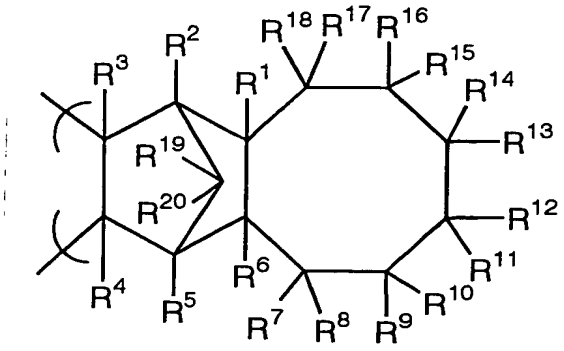
wherein R^1 to R^{12} each independently represents a hydrogen atom, a halogen atom, a hydrocarbon group having 1-10 carbon atoms or a halogenated hydrocarbon group having 1-10 carbon atoms,

General formula (6)



wherein R^1 to R^{16} each independently represents a hydrogen atom, a halogen atom, a hydrocarbon group having 1-10 carbon atoms or a halogenated hydrocarbon group having 1-10 carbon atoms, and

General formula (7)



wherein R^1 to R^{20} each independently represents a hydrogen atom, a halogen atom, a hydrocarbon group having 1-10 carbon atoms or a halogenated hydrocarbon group having 1-10 carbon atoms,

a step of patterning the cyclic olefin based addition polymer as a void-forming polymer,

a step of forming a metallic wiring in the pattern formed on the void-forming polymer,

a step of forming a second dielectric film on the void-forming polymer containing a metallic wiring, and

a step of removing the void-forming polymer between the multilayered wirings by heating to form a cavity between the metallic wirings.

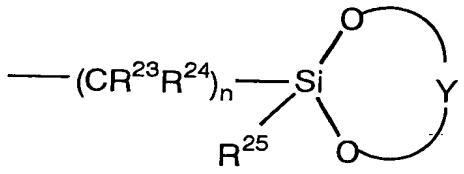
2. The method as claimed in claim 1, wherein the cyclic olefin based addition polymer contains 20 mo% or more of the repeating unit represented by the general formula (1) and/or general formula (2).

3. The method as claimed in claim 1, wherein the cyclic olefin based addition polymer contains 50 mol% or less of the repeating unit represented by the general

formula (3).

4. The method as claimed in claim 1, wherein the cyclic olefin based addition polymer containing, as the hydrolyzable group, a group represented by the following general formula (8) or (9):

General formula (8)



General formula (9)

$$-(CR^{23}R^{24})_n\text{-}SiR^{26}R^{27}R^{28}$$

wherein R^{23}, R^{24}, and R^{25} each independently represents a hydrogen atom, an alkyl group having 1-6 carbon atoms, a cycloalkyl group having 3-6 carbon atoms or an aryl group having 4-6 carbon atoms; R^{26}, R^{27}, and R^{28} each independently represents a hydrogen atom, an alkyl group having 1-6 carbon atoms, a cycloalkyl group having 3-6 carbon atoms, an aryl group having 4-6 carbon atoms, an alkoxy group having 1-6 carbon atoms or an aryloxy group having 4-6 carbon atoms, or a halogen atom; n represents an integer of 0-5; and Y represents a hydrocarbon residue of an aliphatic diol, an alicyclic diol or an aromatic diol, having 2-26 carbon atoms.

5. The method as claimed in claim 1, wherein the cyclic olefin based addition polymer has a weight loss on heating at 350°C for one hour in an inert gas atmosphere and/or a vacuum atmosphere of 5 wt% or less and a weight loss on heating at 500°C for one hour in an inert gas atmosphere and/or a vacuum atmosphere of 80 wt% or more.

6. The method as claimed in claim 1, 2, 3 or 4, wherein the cyclic olefin based addition polymer has a glass transition temperature of 300°C or higher.

7. The method as claimed in claim 1, wherein the cyclic olefin based addition polymer has an elastic modulus at 25°C of 3 GPa or more.